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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: James Bruce FRANKLIN et al.

TITLE: A LIGHT TRANSFER COMPONENT

THE COMMISSIONER FOR PATENTS
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AMENDED CLAIMS

1 – 33 (cancelled).

34. (new) A light transfer component formed from a material that is transparent for light of a predetermined range of wavelengths, the light transfer component comprising:

a first portion being substantially flat,
a second solid rounded portion, and
an intermediate portion disposed between the first and the second portion, the intermediate portion being at least in part hollow and rounded,
wherein the light transfer component is arranged for guiding light from the first portion through the intermediate portion to the second portion.

35. (new) The light transfer component as claimed in claim 34 being arranged so that light guided from the first portion to the second portion will not experience a reduction in cross-sectional area of the material through which the light is guided.

36. (new) The light transfer component as claimed in claim 34 wherein the cross-sectional area is substantially constant throughout the light transfer component.

37. (new) The light transfer component as claimed in claim 34 wherein in use the average solid angle of the propagating light is substantially constant throughout the light transfer component.

38. (new) The light transfer component as claimed in claim 34 being arranged so light guided from the first portion to the second portion will experience light guiding condition in which in use the product of cross-sectional area and the average solid angle is substantially constant.
39. (new) The light transfer component as claimed in claim 34 wherein refractive index is constant throughout the light transfer component.
40. (new) The light transfer component as claimed in claim 34 having two substantially parallel surfaces.
41. (new) The light transfer component as claimed in claim 34 wherein the first portion comprises a rectangular sheet.
42. (new) The light transfer component as claimed in claim 34 being arranged such that light directed from the first portion to the second portion will experience an increase in cross-sectional area of the material through which the light is guided.
43. (new) The light transfer component as claimed in claim 34 being arranged so that in use light guided from the first portion to the second portion will experience light guiding condition in which the product of cross-sectional area and average solid angle will not change by more than 20%.
44. (new) The light transfer component as claimed in claim 34 being arranged such that, in use, light guided from the first portion to the second portion will experience a gradual transition in the cross-sectional and longitudinal profiles of the light transfer component.
45. (new) The light transfer component as claimed in claim 44 wherein the changes in profile are sufficiently gradual such that there are negligible bending losses of the light when the light is guided through the transfer component.

46. (new) The light transfer component as claimed in claim 34 being arranged for connection to an optical cable.
47. (new) The light transfer component as claimed in claim 46 being arranged for face-to-face connection to the optical cable.
48. (new) The light transfer component as claimed in claim 34 being arranged for face-to-face connection to a light converting device.
49. (new) The light transfer component as claimed in claim 34 being arranged for direct connection to at least one light collector sheet.
50. (new) The light transfer component as claimed in claim 49 wherein the first portion is arranged for face-to-face connection with the or each light collector sheet.
51. (new) The light transfer component as claimed in claim 34 wherein the first portion comprises at least one light collector sheet doped with dye molecules and arranged for absorption of sunlight and emission of fluorescent radiation.
52. (new) The light transfer component as claimed in claim 51 wherein the or each light collector sheet and the light transfer component are integrally formed.
53. (new) The light transfer component as claimed in claim 49 being formed from a transparent material with a refractive index that approximates that of the or each collector sheet.
54. (new) The light transfer component as claimed in claim 53 wherein the material is poly methyl methacrylate (PMMA).
55. (new) The light transfer component as claimed in claims 46 wherein the optical cable has a single core.

56. (new) The light transfer component as claimed in claims 46 wherein the optical cable comprises a bundle of optical fibres.

57. (new) The light transfer component as claimed in claim 34 wherein the second rounded portion of the light transfer component is clad with a material of low refractive index.

58. (new) The light transfer component as claimed in claim 34 wherein the intermediate portion of the light transfer component is clad with the material of low refractive index.

59. (new) A light transfer component comprising
 spaced apart first and second portions, the first portion being flat so as to present a cross-sectional surface that is suitable to receive light from a light collector sheet, the second portion being rounded and solid in cross-section, and
 an intermediate portion disposed between the first and the second portion and arranged to transfer light from the first portion to the second portion, the intermediate portion having a cross-sectional shape that varies along its length from the flat portion to the rounded portion and through a portion that incorporates a hollow core.

60. (new) A light transfer component formed from a material that is transparent for light of a predetermined range of wavelengths, the light transfer component comprising:

 a first portion being substantially flat,
 a second solid rounded portion, and
 an intermediate portion disposed between the first and the second portion, the intermediate portion being at least in part hollow and rounded,
 wherein the light transfer component is arranged for guiding light from the first portion through the intermediate portion to the second portion and
 wherein the light transfer component is arranged so that light guided from the first portion to the second portion will not experience a reduction in cross-sectional area of more than 20% of the material through which the light is guided.

61. (new) The light transfer component as claimed in claim 60 being arranged so that light guided from the first portion to the second portion will not experience a reduction in cross-sectional area of the material through which the light is guided.
62. (new) The light transfer component as claimed in claim 60 wherein the cross-sectional area is substantially constant throughout the light transfer component.
63. (new) The light transfer component as claimed in claim 60 wherein in use the average solid angle of the propagating light is substantially constant throughout the light transfer component.
64. (new) The light transfer component as claimed in claim 60 being arranged so light guided from the first portion to the second portion will experience light guiding condition in which in use the product of cross-sectional area and the average solid angle is substantially constant.
65. (new) The light transfer component as claimed in claim 60 wherein refractive index is constant throughout the light transfer component.
66. (new) The light transfer component as claimed in claim 60 having two substantially parallel surfaces.
67. (new) The light transfer component as claimed in claim 60 wherein the first portion comprises a rectangular sheet.
68. (new) The light transfer component as claimed in claim 60 being arranged such that light directed from the first portion to the second portion will experience an increase in cross-sectional area of the material through which the light is guided.
69. (new) The light transfer component as claimed in claim 60 being arranged so that in use light guided from the first portion to the second portion will experience light guiding condition in which the product of cross-sectional area and average solid angle will not change by more than 20%.

70. (new) The light transfer component as claimed in claim 60 being arranged such that, in use, light guided from the first portion to the second portion will experience a gradual transition in the cross-sectional and longitudinal profiles of the light transfer component.

71. (new) The light transfer component as claimed in claim 70 wherein the changes in profile are sufficiently gradual such that there are negligible bending losses of the light when the light is guided through the transfer component.

72. (new) The light transfer component as claimed in claim 60 being arranged for connection to an optical cable.

73. (new) The light transfer component as claimed in claim 72 being arranged for face-to-face connection to the optical cable.

74. (new) The light transfer component as claimed in claims 60 being arranged for face-to-face connection to a light converting device.

75. (new) The light transfer component as claimed in claim 60 being arranged for direct connection to at least one light collector sheet.

76. (new) The light transfer component as claimed in claim 75 wherein the first portion is arranged for face-to-face connection with the or each light collector sheet.

77. (new) The light transfer component as claimed in claim 60 wherein the first portion comprises at least one light collector sheet doped with dye molecules and arranged for absorption of sunlight and emission of fluorescent radiation.

78. (new) The light transfer component as claimed in claim 77 wherein the or each light collector sheet and the light transfer component are integrally formed.

79. (new) The light transfer component as claimed in claim 77 being formed from a transparent material with a refractive index that approximates that of the or each collector sheet.

80. (new) The light transfer component as claimed in claim 79 wherein the material is poly methyl methacrylate (PMMA).

81. (new) The light transfer component as claimed in claims 72 wherein the optical cable has a single core.

82. (new) The light transfer component as claimed in claims 72 wherein the optical cable comprises a bundle of optical fibres.

83. (new) The light transfer component as claimed in claim 60 wherein the second rounded portion of the light transfer component is clad with a material of low refractive index.

84. (new) The light transfer component as claimed in claim 60 wherein the intermediate portion of the light transfer component is clad with the material of low refractive index.